

**DETAILED ACTION**

***Drawings***

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "a control electrode" cited in claim 1 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Specification***

2. The disclosure is objected to because of the following informalities: the specification does not comply with the arrangement of specification.

Appropriate correction is required.

The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

**Arrangement of the Specification**

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT.
- (e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC.
- (f) BACKGROUND OF THE INVENTION.
  - (1) Field of the Invention.
  - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (g) BRIEF SUMMARY OF THE INVENTION.
- (h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (i) DETAILED DESCRIPTION OF THE INVENTION.
- (j) CLAIM OR CLAIMS (commencing on a separate sheet).
- (k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takehara (U.S. 6,101,073) in view of Van Tichelen (EP 1265076) and in evidence of Lewis et al (U.S. 4,371,739).

7. Regarding claim 1, Takehara discloses a ground faults protecting apparatus for a solar power generation apparatus. The solar power generation apparatus includes a solar cell array 21 (Figure 4; col. 3, line 27-28). The reference is inherent that a first output terminal and a second output terminal are provided for establishing external connection to the solar cells. This is well known in the art and supported by the teaching of Lewis (Figure 2; col. 3, line 49-51).

8. The ground fault protecting apparatus of Takehara includes: (1) a detection circuit (reference 23 in Figure 3; col. 3, line 4); (2) a first 11 and a second resistor 12 connecting the first and the second terminals (Figure 4; col. 3, line 55-56); (3) a first signal generator for detecting the value of a voltage difference (reference 16 & 17 in Figure 4 or reference 1 in Figure 1; col. 3, line 56-57 & col. 4, line 1-2, line 46-52); (4) a safety circuit (reference 24 in Figure 2; col. 3, line 46); and (5) a second signal generator (reference 3 in Figure 1; col. 4, line 65-67 & col. 5, line 1-10) that is coupled between the first signal generator (reference 1 in Figure 1) and the safety circuit (reference 24 in Figure 2).

9. Takehara fails to teach the ground fault protecting containing a third resistor, a switch and a control circuit. However, Van Tichelen et al disclose a safety device for monitoring a DC bus insulation. The safety device of Van Tichelen comprises a switch 6 that is controlled by a microcontroller 7 (Q<sub>1</sub> in Figure 2; paragraph [0022]) and a resistor R<sub>7</sub> coupled with Q<sub>1</sub> in the resistor divider network (Figure 2; paragraph [0032]). Van Tichelen further teaches that the configuration as a resistor divider network allows reducing the measured voltage to a sufficiently low value (paragraph [0032]). Therefore,

it would be obvious for one having ordinary skill in the art to incorporate a resistor coupled with a switch that is controlled by a microcontroller as taught by Van Tichelen into the system of Takehara in order to detect ground fault at lower voltage, hence improving safety protection in the light of the teaching of Van Tichelen.

10. Regarding claim 2, the system of Takehara comprises a inverter 22 (Figure 2; col. 3, line 41-45), reads on "the solar power system further comprises a DC-AC - converter" as claimed.

11. Regarding claim 3, the resistor R<sub>7</sub> in the resistor divider network is arranged between a resistor R<sub>2</sub> and the power source 1 (Figure 2), reads on "the third resistor is coupled between the second resistor and the second output terminal" as claimed.

12. Regarding claim 4, Takehara teaches a microcontroller in the control/protection unit 23, reads on "the second signal generator comprises a microcontroller" as claimed.

13. Regarding claims 5 and 6, one having ordinary skill in the art would have found obvious to enclose the components of Takehara/Van Tichelen in a housing in order to protect the system from the harsh environment and to avoid electrical hazardous to human beings.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Xiuyu Tai whose telephone number is 571-270-1855. The examiner can normally be reached on Monday - Friday, 7:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa Neckel can be reached on 571-272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/X. T./  
Examiner, Art Unit 1795

4/7/2008

/Alexa D. Neckel/  
Supervisory Patent Examiner, Art Unit 1795